

What is claimed is:

1. An encoded moving picture data conversion device for converting encoded moving picture data compression-encoded by using inter-frame prediction, and for outputting converted data as encoded output data
5 capable of being subjected to special reproducing, the device comprising:

first storage means for storing said inputted encoded moving picture data;

- 10 decoding means for decoding said inputted encoded moving picture data to decoded data;

re-encoding means for re-encoding said decoded data of a picture frame in a moving picture sequence, in an intra-frame encoding mode in order to generate intra-frame re-encoded data;

- 15 second storage means for storing re-encoded data, said re-encoded data including said intra-frame re-encoded data; and

- 20 selection means for selecting one of said encoded moving picture data stored in said first storage means and said re-encoded data stored in said second storage means for each picture frame, and for outputting the selected data as said encoded output data capable of being subjected to said special reproducing.

2. The encoded moving picture data conversion device according to claim 1,

wherein said re-encoding means comprises:

- 25 means for re-encoding said decoded data of picture frames as many as J following after the picture frame re-encoded in the intra-frame encoding mode, by using inter-frame prediction in order to generate inter-frame

re-encoded data, where J is an integer greater than zero;

means for measuring a picture quality of re-encoded picture frames, said re-encoded picture frames including the intra-frame re-encoded picture frame and one or more inter-frame re-encoded picture frames; and

5 means for controlling a value of said J in accordance with said picture quality, and

wherein said selection means comprises means for, if selecting said intra-frame re-encoded data, also selecting said inter-frame re-encoded data of the picture frames as many as J following after said intra-frame re-encoded data.

3. The encoded moving picture data conversion device according to claim 1,

wherein said re-encoding means comprises:

15 means for skipping picture frames as many as (K-1) after the intra-frame re-encoded picture frame, where K is an integer greater than one;

means for re-encoding said decoded data of a picture frame after K frames from said intra-frame re-encoded picture frame, by using inter-frame prediction with reference to said intra-frame re-encoded picture frame in order to generate inter-frame re-encoded data;

means for calculating the number of frames constituted of said input encoded moving picture data corresponding to said intra-frame re-encoded data in code amount; and

25 means for controlling a value of said K in accordance with the number of frames calculated, and

wherein said selection means comprises means for, if selecting said

intra-frame re-encoded data, skipping the frames as many as (K-1) following after said intra-frame re-encoded picture frame, and for selecting said inter-frame re-encoded data after the K frames from said intra-frame re-encoded picture frame.

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4. The encoded moving picture data conversion device according to claim 1,

wherein said re-encoding means comprises means for re-encoding said decoded data of frames at L-frame intervals in an intra-frame encoding mode to generate intra-frame re-encoded data, in such a way that re-encoded data in each frame occupy at least a part of the frame and re-encoded data gathered from frames as many as M cover an entire frame area, where L is an integer greater than one and M is an integer greater than one, and

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wherein said selection means comprises means for selecting only said intra-frame re-encoded data in response to a high-speed reproducing request, and for outputting said selected re-encoded data as said encoded data capable of being subjected to said special reproducing.

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5. An encoded moving picture data conversion method for converting encoded moving picture data compression-encoded by using inter-frame prediction, and for outputting converted data as encoded output data capable of being subjected to special reproducing, the method comprising:

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a first storage step of storing said inputted encoded moving picture data;

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a decoding step of decoding said inputted encoded moving picture data to decoded data;

a re-encoding step of re-encoding said decoded data of a picture frame in a moving picture sequence, in an intra-frame encoding mode in order to generate intra-frame re-encoded data;

5 a second storage step of storing re-encoded data, said re-encoded data including said intra-frame re-encoded data; and

10 a selection step of selecting one of said encoded moving picture data stored in said first storage step and said re-encoded data stored in said second storage step for each picture frame, and for outputting the selected data as said encoded output data capable of being subjected to said special reproducing.

6. The encoded moving picture data conversion method according to claim 5,

wherein said re-encoding step comprises:

15 a step of re-encoding said decoded data of picture frames as many as J following after the picture frame re-encoded in the intra-frame encoding mode, by using inter-frame prediction in order to generate inter-frame re-encoded data, where J is an integer greater than zero;

20 a step of measuring a picture quality of re-encoded picture frames, said re-encoded picture frames including the intra-frame re-encoded picture frame and one or more inter-frame re-encoded picture frames; and

a step of controlling a value of said J in accordance with said picture quality, and

25 wherein said selection step comprises a step of, if selecting said intra-frame re-encoded data, also selecting said inter-frame re-encoded data of the picture frames as many as J following after said intra-frame re-encoded data.

7. The encoded moving picture data conversion method according to claim 5,

wherein said re-encoding step comprises:

5 a step of skipping picture frames as many as (K-1) after the intra-frame re-encoded picture frame, where K is an integer greater than one;

10 a step of re-encoding said decoded data of a picture frame after K frames from said intra-frame re-encoded picture frame, by using inter-frame prediction with reference to said intra-frame re-encoded picture frame in order to generate inter-frame re-encoded data;

a step of calculating the number of frames constituted of said input encoded moving picture data corresponding to said intra-frame re-encoded data in code amount; and

15 a step of for controlling a value of said K in accordance with the number of frames calculated, and

20 wherein said selection step comprises a step of, if selecting said intra-frame re-encoded data, skipping the frames as many as (K-1) following after said intra-frame re-encoded picture frame, and for selecting said inter-frame re-encoded data after the K frames from said intra-frame re-encoded picture frame.

8. The encoded moving picture data conversion method according to claim 5,

25 wherein said re-encoding step comprises a step for re-encoding said decoded data of frames at L-frame intervals in an intra-frame encoding mode to generate intra-frame re-encoded data, in such a way that

